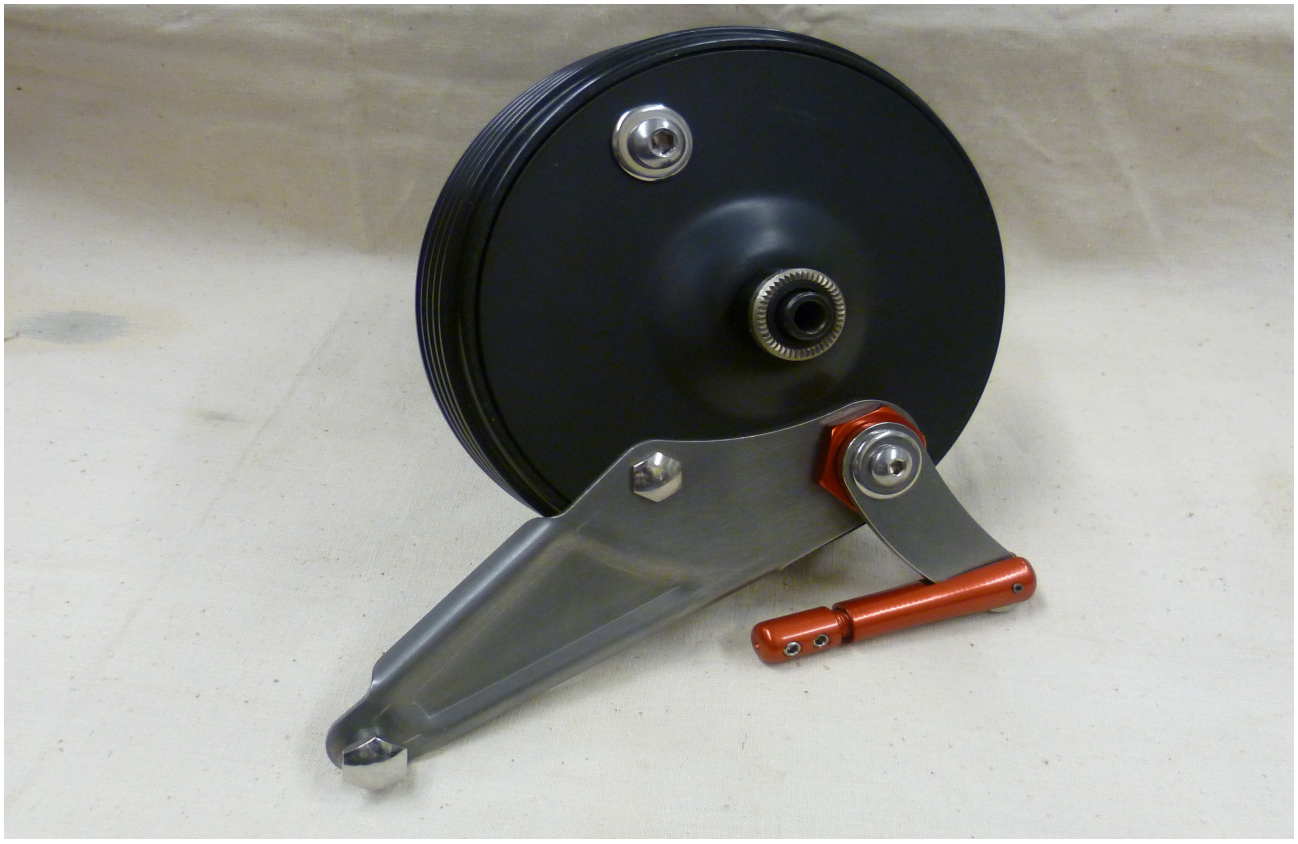
USER MANUAL

MAD DOG DRAG BRAKE



MADDOCK MACHINE LLC
VIDA, OREGON

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-----ABOUT THIS MANUAL-----

This manual is divided into four main sections.

Section 1----------4
This section describes:
The function of the brake.
The kit contents

Section 2----------6
This section describes:
Tools and supplies needed
Installation of the Drum
Installation of the Outer Plate
Installation of the Hooker

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-----TERMS AND CONVENTIONS-----

-----CAUTION-----

A CAUTION DENOTES AN ACTION THAT MAY POSE A RISK OF, OR RESULT IN, DAMAGE TO EQUIPMENT

-----WARNING-----

A WARNING DESCRIBES ANY ACTION THAT MAY POTENTIALLY RESULT IN INJURY OR DEATH

----SECTION 1----

-----DESCRIPTION-----

THE MAD DOG DRAG BRAKE AND THE MM 4.125 DRAG BRAKE (HENCEFORTH REFERRD TO AS "THE BRAKE") IS A SECONDARY BRAKE DESIGNED SPECIFICALLY FOR THE USE OF HELPING TO CONTROL THE DOWNHILL SPEED OF A BICYCLE. THE BRAKE IS NOT INTENDED FOR USE AS A STOPPING BRAKE AND MUST NOT BE USED FOR THAT PURPOSE.

-----The Drum Brake Kit Contains-----

1- Drum- threaded 1.37x24 tpi ISO/bike.
2- Outer plate.
3- Shims, 1 each of 1mm & .5mm.
4- Operating cable hooker & hooker screw.
5- warranty card.

-----WARNING-----

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THIS IS NOT A STOPPING BRAKE

----- WARNING -----

IMPROPER USE OF THE MDD or MM4.125
MAY RESULT IN SEVERE INJURY OR DEATH

-----EQUIPPING YOUR BIKE TO USE THE DRUM BRAKE-----

Your bike must be properly equipped to mount and use the drum brake.

1- The rear hub must be threaded 1.37 X 24 tpi ISO/bike on the non drive side.

2- The left chain stay must have a fitting to restrain the reaction arm. This fitting is sometimes called a pacman. The distance from center of the axle to the rear of the pacman opening must not be greater than 4 .46”(113.28mm) or less than 4.42” (112.27mm). ***See drawing num.3***

3- A device to operate the drum brake.

------ WARNING -----

NEVER USE A SINGLE HAND LEVER TO OPERATE THE DRUM BRAKE AND THE REAR CALIPER BRAKE TOGETHER. THE USE OF A SINGLE HAND LEVER IN THIS MANNER CAN LEAD TO UNPREDICTABLE AND UNCONTROLLABLE SKIDDING OF THE REAR WHEEL, LOSS OF CONTROL OF THE BIKE, SEVERE INJURY, EVEN DEATH.

The most common operators are:

A- A third brake lever.

B- A friction shift lever.

C- A bar end shift lever.

D- An equalizer may be used to operate both front and rear caliper brakes with one brake lever, and the second lever used to operate the drum brake.

The operator may be mounted at the captain or stoker position.

----SECTION 2----

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IF YOU ARE NOT FAMILIAR WITH THE TOOLS OR PROCEDURES DESCRIBED IN THIS MANUAL CONSULT WITH YOUR DEALER

----- INSTALLING THE DRUM BRAKE -----

Things you will need:

1- Cleaning Equipment
   A. A toothbrush or other small fine bristle brush.
   B. Solvent or cleaning solution.
   C. Rags or paper towels.
2- Tools
   A. 2 mm hex wrench.
   B. Cable cutter.
   C. Inch Lb. rated torque wrench with 2mm hex drive bit.
3- Supplies
   A. Anti-seize or high temperature grease.

----- INSTALLATION OF THE DRUM-----

1- Remove rear wheel.
2- Remove QD (quick release) skewer.
3- Remove existing brake if applicable.
4- Remove non-drive side serrated washer and spacer.
5- Remove thread protector if present.
6- Clean hub and drum threads with solvent and brush.
7- Dry threads.
8- Examine threads. Threads must be free from damage, dings, dents, or any disruptions of the threads If any damage is found, **DO NOT PROCEED WITH INSTALLATION**, **CONSULT YOUR DEALER**.
9- Lightly coat threads with anti-seize or high temp grease.
10- Thread drum onto hub. It is critical that extreme caution be used when starting the threading.

-----CAUTION-----

Cross threading can damage the hub and the drum. If you experience any difficulty in starting the thread or binding in threading the drum up to the shoulder, STOP, carefully remove drum. Re-clean threads and examine. See step #8 above.

11- Thread drum on until it stops at the shoulder of the hub. DO NOT TIGHTEN. Somewhat loose is good at this point as the drum will tighten with use.

12- Clean up any anti-seize or grease left inside the drum and the drum/hub shoulder.

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----- INSTALLATION OF OUTER PLATE-----

The outer plate is supplied with a bushing allowing the brake to be installed on hubs with either a 10mm or 12mm axle. If your hub is equipped with a 10mm axle use the outer plate as supplied. For use with 12mm axles the bushing must be removed. The best method of removal of the bushing is with the MDD bushing removal tool available from your dealer. If you must remove the bushing without the bushing tool,

-----CAUTION-----

BE VERY CARFULL NOT TO DISTORT THE OUTER PLATE.

A small punch with a flat tip may be used to remove the bushing. Support the outside of the outer plate on a hardwood block centered over a hole slightly larger than 12mm,with the small punch contacting **ONLY** the bushing, gently tap the bushing out with a small hammer.

1- Place outer plate on axle and push all the way on.
2- Check for clearance between the inside of the reaction arm and the outer lip of the drum. There must be no less than 1mm of clearance. There are two shims supplied with the drum brake. One each of 1mm and .5mm. Remove outer plate, Use one or both to obtain proper clearance. Re instal outer plate. ***See drawing num. 4***
3- Install the serrated washer.
4- Check the above clearance again.
5- Temporarily install wheel into dropouts **WITHOUT** the reaction arm engaging the pacman, tighten QR to your normal setting, **CHECK CLEARANCE AGAIN.**

----- CAUTION-----

Failure to allow for proper clearance between the drum and reaction arm will damage the drum and void warranty.

6- Remove and reinstall wheel with reaction arm anchor bolt engaged into the pacman. The outer plate **MUST NOT** be pushed out of alignment by the reaction arm or the anchor bolt head touching the side of the pacman. If the arm or bolt head is touching the pacman, remove wheel and **VERY GENTLY** slightly bend the arm so that only the barrel of the bolt touches the pacman. Reinstall wheel and check arm/bolt head/pacman clearance, adjust as necessary. ***See drawing num. 5***

-----WARNING----

DO NOT USE A LONGER BOLT TO ADJUST THE CLEARANCE

7- Check the for and aft position of the anchor bolt barrel in pacman slot. The anchor bolt barrel must be close to rear end of the slot but not touching it. If the anchor bolt is not in the above position STOP the installation.

8- Engage brake manualy and turn wheel counterclockwise to tighten deum onto the hub. This will tend to centralize the drum to the hub.

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----- WARNING -----

STOP DO NOT PROCEDE WITH INSTALLATION, REMOVE THE BRAKE, DO NOT USE THE BRAKE.

THE PACMAN IS IN THE WRONG POSITION FOR USE WITH THIS BRAKE. DAMAGE TO YOUR FRAME MAY OCCURE, CONTACT YOUR DEALER.

-----INSTALLATION OF THE CABLE HOOKER-----

1- Install operator and cable at desired position.
2- Route cable to left chain stay.
3- Remove hooker screw from hooker.
4- With a 2mm hex wrench, back out set screws so that the cable passes through the axial hole of the hooker screw.
5- thread cable through axial hole of the hooker screw.
6- place hooker on actuating arm.
7- push actuating arm forward until resistance is felt.
8- Hold hooker hooker screw parallel to the hooker so that the faces touch. ***See drawing num. 6***
9- With a 2mm hex wrench snug up the two set screws.
10- Cut cable at right hand end of the hooker screw. ***See drawing num. 6***
11- Tighten set screws 10 to 12 Inch Lb. (1.1 to 1.4 NM) with torque wrench.
12- Install hooker screw into hooker, thread together until there is about 1/16" to 1/8" (1.6mm to 3.2mm) between the faces.
13- Push Actuation Arm forward, engage hooker pin into Actuation Arm slot. Be sure the hooker pin drops to bottom of the hooker slot. The brake should not be engaged at this setting. If brake is engaged unscrew hooker screw until brake is not engaged.

-----WARNING----

THE MAXIMUM SPACE ALLOWED BETWEEN THE HOOKER SCREW FACE AND THE HOOKER FACE IS 15/64" (5.95mm) UNDER NO CIRCUMSTANCE MAY THIS SPACING BE EXCEEDED. SEE DRAWING NUM. 7

14- TEST THE BRAKE ON LEVEL GROUND BEFORE USING IN HILLY TERRAIN.

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----SECTION 3----

-----DRUM REMOVAL-----

-----CAUTION-----
USE ONLY APPROVED TOOLS FOR DRUM REMOVAL
USE OF OTHER TOOLS OR METHODS MAY DAMAGE DRUM AND VOID WARRANTY

APPROVED TOOLS FOR DRUM REMOVAL:

1- MMDB-00037 special wrench for use in conjunction with a 1/2" ratchet wrench or breaker bar. Available from your dealer.

2- 1 5/8" or 41mm Socket.

----- INSTRUCTIONS FOR DRUM REMOVAL-----

1- Remove rear wheel from bike
2- Remove outer plate
3- Apply special wrench or socket to central hex of the drum , unscrew **counter clockwise**.

-----WARNING-----
DO NOT TOUCH BRAKE WITH BARE SKIN AFTER USE. IT WILL BURN YOU. ALLOW BRAKE TO COOL BEFORE TOUCHING IT.

----SECTION 4----

-----DAILY CHECKS -----

1- Prior to use you should visually check the brake to ensure that it appears to be in working order.

2- Operate the brake before starting your ride to ensure that the brake seems mechanically sound.

3- On level ground , before you get to hills on which you will want to use the brake, actuate the brake gently as a test of smooth operation.

4- After using the brake in wet weather, be very careful applying the brake until you are sure that the brake operates smoothly. The braking surface of the drum can develop rust which can effect the smooth operation of the brake. If you encounter this problem, repeated gentle operation of the brake will smooth it out, if this does not smooth out operation of the brake see #2 in maintenance section.

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-----MAINTAINCE-----

1- Always perform the daily checks.

2- After a lengthy period of storage the outer plate should be removed to check the condition of the braking surface of the drum and the braking surface of the shoes. If the braking surface of the drum shows any sign of rust, lightly sand the surface with 150 grit sand paper. If the shoes appear to have a glazed surface, lightly sand the surface with 150 grit sand paper to remove the glazing.

-----SUGESTIONS FOR USE-----

1- When approaching a steep or long descent, moderate your speed.

2- Actuate drum brake before you get to white knuckle speed.

3- When descending a long hill, pulse the brake to allow it to cool.

-----WARNING-----

4- **Be very careful when using the rear caliper brake and the drum brake together. The combination of the two may cause skidding of the rear wheel leading to loss of control. It is best to release the drum prior to engagement of the rear caliper brake.**

5- Give control of the brake to the stoker, they are way smarter than you and will most likely save your life.

Thanks for purchasing the brake.

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541.896.3843

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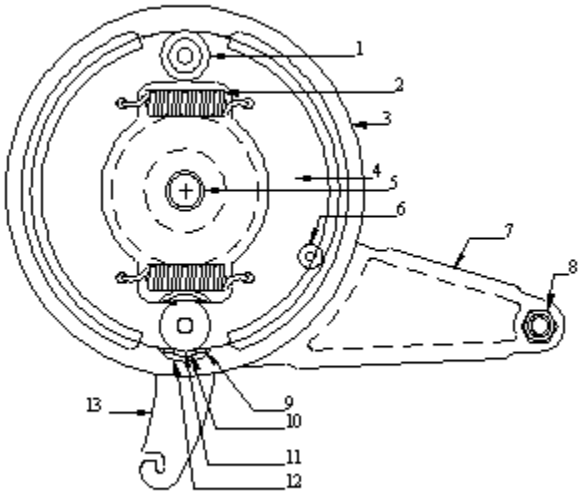
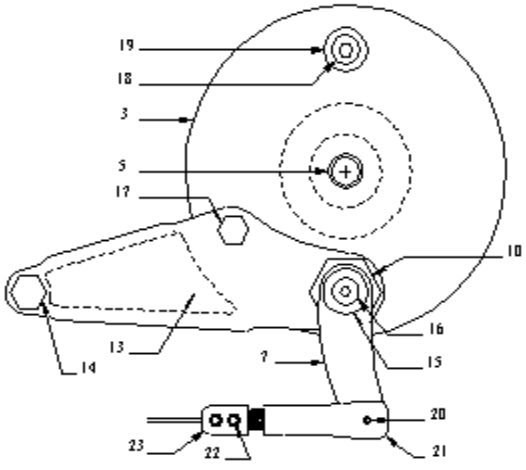
-----PARTS-----

Drawing num. 1



Drawing num. 2



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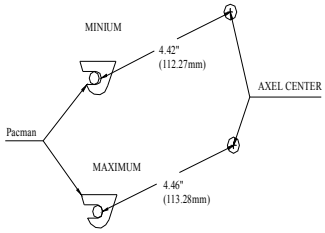
Drawing num. 3
Pacman to axle center distance



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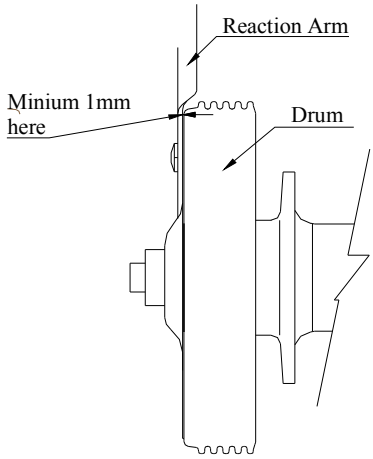
Drawing num. 4

Reaction Arm to Drum clearance



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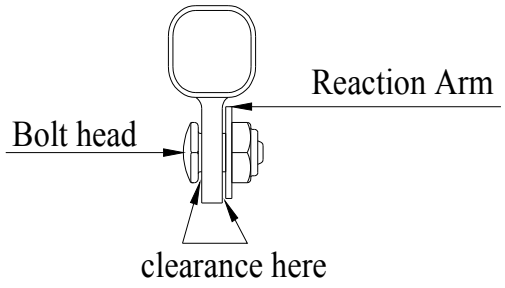
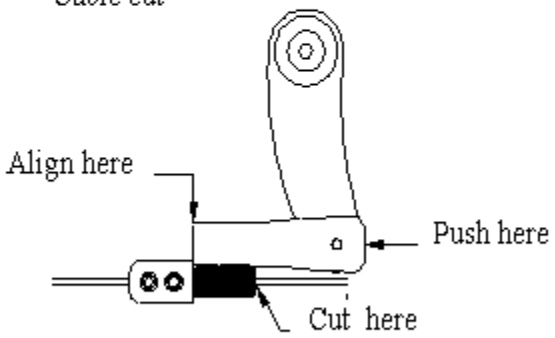
Drawing num. 5

Reaction Arm & Bolt head
clearance with Pacman.



Drawing num. 6

Cable lenth measurment
Hooker Screw placement
Cable cut



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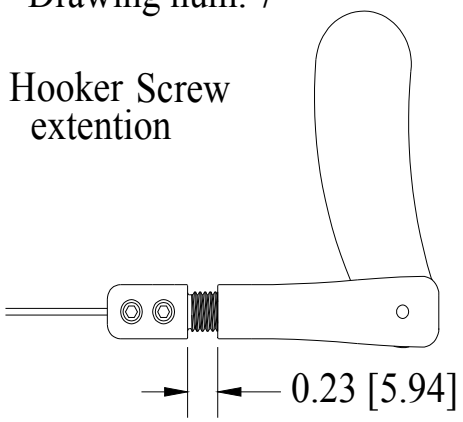
Drawing num. 7



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-----PARTS LIST-----

from drawings num. 1 & 2 page 10

NUMBER FROM DRAWING — MADDOCK MACHINE PART NUMBER

1-Shoe stop----------MMDB-00370
2-Spring----------MMDB-00190
3-Outer Plate----------MMDB-00030
4-Shoe----------MMDB-00200
5-10mm/12mm Bushing----------MMDB-00320
6-Reaction Arm Bushing Screw----------MMDB-00060
7-Reaction Arm----------MMDB-00040
8-Reaction Arm Anchor Bolt Nut----------MMDB-00260
9-Cam Pad----------MMDB-00220
10-Cam Bushing Screw----------MMDB-00300
11-Cam----------MMDB-00080
12-Cam Bushing Nut----------MMDB-00120
13-Actuation Arm----------MMDB-00130
14-Reaction Arm Anchor Bolt----------MMDB-00250
15-Actuation Arm Washer----------MMDB-00330
16-Actuation Arm Screw----------MMDB-00140
17-Reaction Arm Bushing----------MMDB-00050
18-Shoe Stop Screw----------MMDB-00280
19-Shoe Stop Washer----------MMDB-00290
20-Hooker Pin----------MMDB-00310
21-Hooker----------MMDB-00160
22-Hooker Screw Set Screw----------MMDB-00350
23-Hooker Screw----------MMDB-00170

Not pictured-

Drum----------MMDB-00010
Special Wrench----------MMDB-00037

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----WARRANTY----

PRODUCT MUST BE REGISTERED WITH MANUFACTURER WITHIN THIRTY (30) DAYS OF PURCHASE.

THE MAD DOG DRAG BRAKE AND THE MM 3.125 DRAG BRAKE (“BRAKE”) ARE WARRANTED TO THE ORIGINAL REGISTERED OWNER AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR THE LIFE OF THE BRAKE.

THIS WARRANTY AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP IS LIMITED TO, AT THE COMPANY’S OPTION, THE REPLACEMENT OR REPAIR OF ANY DEFECTIVE PARTS OR MATERIALS.

THIS WARRANTY TO REPLACE OR REPAIR IS CONDITIONED ON THE FOLLOWING:

1. Registration of the product with Manufacturer within thirty (30) days of purchase;
2. Reasonable opportunity by the Manufacturer to inspect for defects;
3. The Brake having not been subjected to misuse,negligence, or accident; and
4. The Brake having not been altered or modified.

EXCLUSION OF WARRANTIES

WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR ARISING FROM A COURSE OF DEALING OR USAGE OF TRADE ARE SPECIFICALLY EXCLUDED, AND THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION OF THE PRODUCT CONTAINED IN THIS MANUAL.

THE WARRANTY SHALL BE LIMITED TO THE REFUND OF THE PURCHASE PRICE FOR THE PRODUCT.

THE MANUFACTURER SHALL NOT BE LIABLE FOR PROXIMATE, INCIDENTAL, CONSEQUENTIAL, OR OTHER DAMAGES. MANUFACTURER’S LIABILITY SHALL BE LIMITED SOLELY AND EXCLUSIVELY TO A REFUND OF THE PURCHASE PRICE.

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